APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,200	10/28/2003	David M. Chess	GB920030050US1	7325

66517 7590 06/04/2007	EXAMINER
STEVEN E. BACH, ATTORNEY AT LAW 10 ROBERTS ROAD NEWTOWN SQUARE, PA 19073	HOANG, DANIEL L

ART UNIT	PAPER NUMBER
2136	

MAIL DATE	DELIVERY MODE
06/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _02 March 2007_.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-14_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-14_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 3/02/07 have been fully considered but they are not persuasive.

Applicant argues:

I. The cited reference (Grimm) does not teach, "in response to a system call, executing a hook routine."

Applicant states that a system call is an operation which transfers control of a processor, such as by stopping the current processing in order to request a service provided by an interrupt handler. Applicant further argues that executing a hook routine transfers control of a processor. Examiner respectfully contends that these arguments render the claim ambiguous and indefinite. According to these arguments, the claim language would essentially read, "in response to an operation which transfers control of a processor, executing a hook routine which transfers control of a processor at a location of said operation which transfers control of a processor." Examiner further argues that applicant's arguments are not aligned with applicant's previously submitted specification. Namely, applicant argues that a hook routine is a program that works at the transfer of control of a processor. It is unclear whether applicant intends to mean that a hook routine works at the transfer of control of a processor or if a hook routine actually transfers control of a processor, or both. Further, applicant's specification defines hooking as the insertion of an additional routine at a call location. The numerous definitions of what a hook routine is, both in applicant's specification and applicant's arguments, make it unclear to examiner which definition is actually intended and further makes the difference between a system call and a hook routine unclear. For these reasons, applicants argument that Grimm does not disclose or suggest responding to a system call is not persuasive. Examiner maintains his original interpretation of the claim language and the original rejection of claims 1, 8, and 14 are maintained.

II. Grimm does not teach "determine a data flow or process requested by said call."

Examiner respectfully disagrees. It is clear that when a software component is executed by the system, a data process is requested. It is further clear that this process is determined because it must be

intercepted. Applicant's argument that the hooking routine generates an icon or other graphical representation of the current operation is insufficient to overcome the rejection because it is not present in the current claim language and thus will not be addressed. Applicants arguments on page 6, 2nd paragraph also pertain to this argument but also are not present in the current claim language. Said arguments suggest that certain steps are not taught by the Grimm reference. These steps are not in the current claim language.

III. The present application clearly indicates that it is desirable to hook the lowest level calls where possible.

Examiner assumes that by arguing this point, applicant intends to imply that the Grimm reference does not hook the lowest level calls. In accordance to applicant's specification, later versions of Windows, which are not based on DOS operating systems, are based on high level system calls. Based on examiner's interpretation, it is possible that in some operating systems, it wont be possible to hook the lowest level calls. Therefore, it's possible to conclude that high level system calls are hooked. Therefore applicant's above argument is not sufficient in overcoming rejections.

IV. Grimm does not disclose "said information flow diagram illustrates locations of said data at stages of a processing activity.

Examiner respectfully disagrees and contends that the cited "audit record" accomplishes the above.

V. Grimm does not disclose "said system call is selected from the set of: open file, copy file to memory, copy memory to register, mathematical functions, write to file, or network or communication functions."

See Grimm, col. 1, lines 58-67 and col. 2, lines 1-16, where it is clear that systems calls are monitored in order to provide indication to security administrators of various network or communication functions.

VI. Grimm does not disclose "said system call is a software interrupt of an operating system."

Applicant defines software interrupts as program generated interrupts that stops the current processing in order to request a service provided by an interrupt handler. Examiner contends that the

cited reference teaches that the original software component is stopped of its current activity and

modified. Examiner contends this is analogous to the claimed invention.

In view of the above arguments, examiner concludes that applicant's arguments are not

persuasive in overcoming the rejections of the previous office action and thus, said rejections are

maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Grimm et al.,

US Patent No. 6,317,868, hereinafter Grimm.

As per claim 1, 8 and 14 Grimm teaches:

A method for detecting malicious software within or attacking a computer system, said method comprising

the steps of:

> *[see column 8, lines 56-60] "the present invention readily enables administrators and users of computer systems to enforce site specific security policies on software components by applying access control, protection domains, and auditing trails."*

in response to a system call, executing a hook routine at a location of said system call to

> *[see column 4, lines 23-27] "When software component 11 as originally created needs to be loaded for execution by a computer, the present invention provides an introspection service 13 that intercepts the software component for analysis."*

(a) determine a data flow or process requested by said call,

> *[see above, "original software component 11 needed to be loaded for execution."]*

(b) determine another data flow or process for data related to that of said call,

> *[see column 4, lines 65-67 and column 5, lines 1-2] "a component system (i.e., a computer or workstation) to which the original software component was directed for execution issues a command to load the software component for execution. Instead, the original software component is loaded and parsed as indicated in a block 12."*

> *[see column 6, lines 17-20] "A call is made to the component operation in a block 100. The modified software component invokes enforcement service 19 before the original component operation is executed."*

(c) automatically generate a consolidated information flow diagram showing said data flow or process of

said call and said other data flow or process, and after steps (a-c),

> *[see column 7, lines 27-31] "A positive response to either of decision blocks 140 or 160 causes an audit record to be created in a block 142 or in a block 162, respectively. In the event that an audit record is necessary, one is created that lists the component operation, its arguments, any access control checks, and their results."*

(d) call a routine to perform said data flow or process requested by said call.

> *[see column 6, lines 6-9] "After a modified software component has been loaded (i.e., linked and activated) by a component system, it executes on the component system in the same manner it would have prior to modification by the present invention."*

As per claim 2, Grimm teaches:

A method as set forth in claim 1, wherein a user monitors said information flow diagram and compares the

data flow or process of steps (a) and (b) with a data flow or process expected by said user.

> *[see column 6, lines 58-63] "The enforcement service then performs access checks on each argument, or object, to be passed to the component operation. Each of these tests is made by querying the security policy service with the security identifier of the subject and the security identifier of the object to be checked."*

As per claim 3 and 9, Grimm teaches:

A method as set forth in claim 1, wherein said information flow diagram illustrates locations of said data at

stages of a processing activity.

> *[see above, "A positive response to either of decision blocks 140 or 160 causes an audit record to*
>
> *be created in a block 142 or in a block 162, respectively."]*

The audit trail is can be created at blocks 142 and 162 of the process.

As per claim 4 and 10, Grimm teaches:

A method as set forth in claim 1, wherein said system call is selected from the set of: open file, copy file to memory, copy memory to register, mathematical functions, write to file, and network or communication functions.

> *[see column 4, lines 27-34] "Based upon information determined by introspection service 13, a*
>
> *security policy service 15 instructs an interposition service 17, which is also included in the*
>
> *present invention, how to modify the original software component to adhere to the security*
>
> *policies of the site."*

As per claim 5 and 11, Grimm teaches:

A method as set forth in claim 1, wherein said system call is a software interrupt of an operating system.

> *[see column 4, lines 27-34] "Based upon information determined by introspection service 13, a*
> *security policy service 15 instructs an interposition service 17, which is also included in the*
> *present invention, how to modify the original software component to adhere to the security*
> *policies of the site."*

As defined by applicant's specification, a software interrupts are program generated interrupts that stop the current processing in order to request a service provided by an interrupt handler. Grimm's invention teaches that the original software component is stopped of its current activity and modified as seen above.

As per claim 6 and 12, Grimm teaches:

A method as set forth in claim 1, wherein said system call causes a processor to stop its current activity and execute said hook routine.

> *[see rejection of claim 1 wherein the software component is intercepted.]*

As per claim 7 and 13, Grimm teaches:

A method as set forth in claim 1 wherein said system call is made by malicious software.

> *[see column 7, lines 63-67] "the security policy service returns the appropriate access mode, and*
> *enforcement service 19 determines whether the returned access mode includes the specified*
> *access mode. If the returned access mode includes the specified access mode, then the check is*
> *successful."*

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from

the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date

of this final action and the advisory action is not mailed until after the end of the THREE-MONTH

shortened statutory period, then the shortened statutory period will expire on the date the advisory action

is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX

MONTHS from the mailing date of this final action.

POINTS OF CONTACT

*.   Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

> Commissioner for Patents
> P.O. Box 1450
> Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

> Customer Service Window
> Randolph Building
> 401 Dulaney Street
> Alexandria, VA 22314

*.   Any inquiry concerning this communication or earlier communications from the examiner should

be directed to Daniel L. Hoang whose telephone number is 571-270-1019. The examiner can normally

be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

Nasser Moazzami can be reached on 571-272-4195. The fax phone number for the organization where

this application or proceeding is assigned is 571-273-8300.

> *Information regarding the status of an application may be obtained from the Patent Application*
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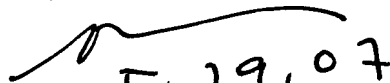> *obtained from either Private PAIR or Public PAIR. Status information for unpublished*

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Daniel L. Hoang
5/28/07

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5/29/07